User Manual

Laser Tattoo Removal Equipment

Titan 3
Chapter 1  Introduction

8” intellective color touch screen

Safe quick-stop switch

CPC antileakage connector

Anti-seismic and heat resisting handle

Handle holder

Safe key switch

USB port

Aim light switch
Chapter 2 Installation

1. Packlist

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main machine</td>
<td>1</td>
</tr>
<tr>
<td>handle</td>
<td>1</td>
</tr>
<tr>
<td>Laser tips</td>
<td>2 or 3</td>
</tr>
<tr>
<td>Pedal switch</td>
<td>1</td>
</tr>
<tr>
<td>OD4+ Glasses</td>
<td>1</td>
</tr>
<tr>
<td>Eyepatch</td>
<td>1</td>
</tr>
<tr>
<td>Keys</td>
<td>2</td>
</tr>
<tr>
<td>Power line</td>
<td>1</td>
</tr>
<tr>
<td>Funnel</td>
<td>1</td>
</tr>
<tr>
<td>Mouse</td>
<td>1</td>
</tr>
<tr>
<td>Water pipe</td>
<td>1</td>
</tr>
</tbody>
</table>

2. Installation

- **Fix handle holder on the machine.** The screw holes have been made before delivery. You can find it on one side of the machine.
3. Connect the handle

When to connect the handle onto the machine, please:

a. please push-in the two lock buttons on both side of the handle plug

b. don’t draw the handle hose too hardly, or the handle may be pull off from the holder and drop on ground leading to broken

Some strength is needed to connect the handle plug onto the handle socket. You should hear two sounds pa...pa or the two sounds happen at the same time. The lock buttons bounces. That’s means the connection is finished. Or you need to re-connect it.

The handpiece must be connected onto the machine very well, or water circle may be bad and it may leads handpiece broken.
1. The following picture is about the handpiece connectors.

*In red circles: electrodes*

*In green circles: water circulation ports.*

Don’t get water on electrodes when to add water, discharge water, or plug in and plug out the handpiece, or it may cause damage on handpiece or the machine when you turn on the machine.

If you find water on electrodes, you cannot use the machine until drying it.

2. You cannot plug in or plug out the handpiece when the machine is on.
4. Water-In

**Attention:** Before turning on this machine, pure water or distilled water must be filled into the machine from “Water-In” until water goes out fluently from “Water Overflow”.

Pure water or distilled water is needed.

Before Water-In,

a. please take down the plugs in the Water-In and Water flow on the back of the machine.

The method to take down the two plugs is to 1) push in the blue outlet and 2) pull out the plug at the same time.
b. Get a basin ready under Overflow hole.

c. Fix the funnel and water pipe
Add water:

a. Connect water pipe and funnel.

b. Add pure water or distilled water from Water-In until water runs out strongly from Water Overflow.

5. Connect pedal switch

**Chapter 3 Introduction of Laser Tattoo Removal Equipment**

1. **Treatment principle:**

   Depending on the Q-Switched Nd, the instrument breaks pigment in injured tissue by means of high energy delivered instantly from laser. The principle of demolishment by laser: specific-wavelength laser gathers high energy instantly and shoots to penetrate cuticle in a cutty time (6 nm) and reaches injured tissue in order to break pigment into fragments. As a result, the pigment agglomerates expand in high speed because of heat and explode into particles instantly. Part of particles (in shallow cuticle) is discharged from the body and the other part (in deep tissue) is broken into grains small enough to be absorbed and digested by macrophage and removed out of the body by lymph system. Accordingly, the color of pigment in injured tissue fades and up to the color of normal skin. Since this specific wavelength can only be absorbed by
pigment particles, no injury happens to normal skin and normal tissues.

2. Application:
   The sapphire Q-switch laser tattoo & eyebrow removal equipment can effectively cure pathological changes of endogenous and exogenous pigment formed by mixed pigment--pigment deposit cause by operative errors on dark embroider eyebrow, embroider lip, soak lip, embroider eye line, lip line, tattoo (including traumatic tattoo), allergy source pigment, such as black, blue, green, purple, brown and red color in freckles, cafe-au-lait spots, age pigment, black naevus, etc.

3. Reference table of all kinds of treatment period of case history:

<table>
<thead>
<tr>
<th>Case</th>
<th>Time</th>
<th>Treatment times</th>
<th>Treatment intervals (intervals of two treatments)</th>
<th>Remark (requirements in treatments)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tattoo</td>
<td>1~4</td>
<td>30~45days</td>
<td></td>
<td>Good effect if blood oozing</td>
</tr>
<tr>
<td>Embroider eyebrow</td>
<td>1~3</td>
<td>30~45 days</td>
<td>protect eyeball when shaving eyebrow</td>
<td></td>
</tr>
<tr>
<td>Embroider eyeline</td>
<td>1~3</td>
<td>45~60days</td>
<td>protect eyeball when shaving eyebrow</td>
<td></td>
</tr>
<tr>
<td>Dyelip Soaklip</td>
<td>1~3</td>
<td>30~45days</td>
<td>choose 532nm the light head</td>
<td></td>
</tr>
<tr>
<td>Eyebrow</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Embroider lip</td>
<td>1~3</td>
<td>30~45days</td>
<td>Good effect if blood oozing</td>
<td></td>
</tr>
<tr>
<td>Soak lip</td>
<td>1~4</td>
<td>30~45days</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age pigment</td>
<td>3~7</td>
<td>30~45days</td>
<td>Good effect if blood oozing</td>
<td></td>
</tr>
<tr>
<td>Naevus</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birthmark</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chapter 4 Safety Attentions

1. Laser safety:
   (1) According to laser radicalization safety, laser eyebrow & tattoo removal equipment belong to the fourth laser product;
   (2) Laser is invisible infrared light, wherein, the 532nm laser is a light that is green, dazzling visible light. Accordingly, any operator shall wear a pair of goggles with wavelength range 200~1080nm;
   (3) The laser window is located at the bottom of the treatment head. Anyone must avoid radiation;
   (4) Anyone should never look directly at the bottom of the treatment head or any reflecting laser light;
   (5) Keep combustible and explosive stupefacient, liquid, gas (for example: ethanol aether laughing gas oxygen and so on away far from laser radiation area and defend measures should be taken;
   (6) Don’t irradiate laser to metal devices, or laser is reflected and is dangerous to anyone around;
   (7) No reflecting things worn, such as watch, necklace, bracelet, etc;
   (8) Must offer safety sound safeguard to sufferer’s eyes, when removal eye line, the worker must
keep out sufferer’s eyeballs by gauze, the worker should have ophthalmic clinic experience and strict according to company training way.

(9) Different pigment assimilate different laser, the choice of dosage must from small to big.
(10) Our company advice you prepare special laser room and prepare air-condition or xerantic machine and paste treatment notice matter.
(11) Notice: big facula relative lesser power density, small facula relative biggish power density.

\[
\text{Power density} = \frac{\text{power big or small}}{\text{facula acreage}}
\]

2. Eye safety:
   (1) Any operator in operation area shall wear goggles (200—1080nm) and any sufferer’s eyes shall be protected strictly and effectively;
   (2) Never look directly at laser or reflected laser even wearing goggles;
   (3) Using gauze or eyelid plate to cover eyes, wearing goggles are all effective to protect sufferer’s eyes. Wherein, humid gauze to cover eyes is more effective, but treatment part should be dry;
   (4) The equipment should be off power when debugging laser or clean laser lens.

3. Electric safety:
   a) According to electric shock egis sort, the laser eyebrow and tattoo removal series belong to 1-B model general equipment.
   b) Connect measure up international monomial three line electrical outlet, the spec 10A upwards.
   c) Steady voltage.
   d) After stop the machine, it inside still leave behind remnant voltage, so can’t optionally take apart machine.

4. Carry safety:
   a) The machine is portable equipment, move easy.
   b) Must not hit the light head of treatment, because it has exact optics system.
   c) Keep water pipe expedite and treatment handle should be packaged by sprung materials.
   d) Before carrying, must take away apertured cover of water tank, instead of imperforate cover of water tank.

Chapter 5 using of the laser machine

1. Notice when operating
   (1) Make sure the operation room clear when operator handles the equipment.
   (2) Operators must wear white or tint work clothes in order to reduce radiation to body.
   (3) The illumination of the operation room must strong enough in order to enlarge indoor occupants’ pupil.
   (4) Don’t use the specular reflection articles while you use the laser machine.
   (5) The operator must know about the diseases and symptoms of the sufferers and tell them the possible normal responses during and after operation.
   (6) Operators who are professional must keep the laser beam away from non-treated areas.
   (7) Operators must make sure the safe of the eyes of sufferer when treating the embroider eye line, because the harm to eye is irreversible.

2. Installation procedure
□ To place: Place the equipment steadily in the operation room or treatment room which the temperature is between 22—28°C and the humidity is below 10%.
□ To inject Water: Inject 600ml medical distilled water and pure water from the water injection hole on the top of the equipment. From the water hole you can see water level flat to the first heat dissipation hole which is in side of the crate, so called standard level.
□ To choose treatment light head and wear glasses: To choose the relevant light head according your need and tighten the light head follows the threads direction. 1064nm gets rid of black, blue and cyanine pigment, and 532nm gets rid of red, coffee and brown pigment.
□ To change the imperforation tank cap into perforated tank cap to make sure the water cycle normally.
□ To install: To connect the power supply line and food switch pedal in the condition that there is no endosmosis and external leakage.
   a) To install food switch pedal: to make sure the orifice be tightened according to the clockwise.
   b) To install the electric outlet: one side to connect the line to the tail of the machine, and the other side to connect to the three holes outlet.
(6) To electrify: You can insert the key right-lateral to the opening position, and whole of the machine electrify right away.

3. Operation methods
(1)Operation methods for touching interface

Examination of waterflow
Waterflow is very important. If waterflow is bad, the handle is easy to be broken.
Step 1. After you add new water every time, let the handle hose and handle in lower level than the handle connector. It is easier for the water to run in.
Step 2. Then turn on the machine, let the machine run in 5-10 seconds. Turn off the machine.
Repeat Step 2 for 2-3 times.

Operation:
Step one: insert the key and right-lateral to the opening position. At that time whole of the machine electrify and you can hear the normal sound of the water cycle. (The red hurry-up switch must be lifted.) And now you must examine the water cycle in the water tank if there is water column inject.
You can go into next step if you make sure that the water cycle is normal.
Turn on the machine, see the screen as follows:
In this screen, there are two item need you to adjust: Frequency and Power. Frequency is 1-6 adjustable. For a new hand, it is better to use 1-3 Hz. It is better not use 6 Hz, 1-5 Hz produces enough power for every shot. Power is 300-1500 adjustable. Please try from 300. Click ➧ or ➦ to raise or low the Frequency or Power.
**Procedure to operate the laser**

1. Adjust the Frequency and Power ready.

2. Click ![Ready](image). You will hear a “click” from the machine.

3. Fix 1064nm tip(for blue, black, cyan) or 532nm(for colorful tattoos like red, coffee, brown..) tip on the handle.

4. Let the laser tip vertical to the tattoo area and the laser exit on the laser tip touches the tattoo area.

5. The laser will shoot when you press the Pedal switch. At this moment, you feel weak shots. Increase the distance between the laser exit and the tattoo slowly and you will find the energy focus when you hear “pa..pa..pa”. This distance is the strongest.

6. When you finish a treatment, please click ![Standby](image) to have the laser Standby. Then turn off the machine by key switch. It is not good to the laser if turning off the machine directly without ![Standby](image).

**Attention:**

1. When the machine is on, the laser exit on the handle never towards to your eyes, or other people. The laser is harmful.

2. The operator should wear the protective glasses, and the patient should wear eyepatch.

**Choose language:**

![Language selection](image)

Click ![Language](image) and enter language choose screen as below:

Click **language**, you can select freely from the following 9 languages:
### SPECIFICATIONS:

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laser type</td>
<td>ND YAG Q-switch laser</td>
</tr>
<tr>
<td>Wavelength</td>
<td>1064nm, 532nm</td>
</tr>
<tr>
<td>Controller</td>
<td>8” color touch screen</td>
</tr>
<tr>
<td>Energy</td>
<td>Max 1500mJ</td>
</tr>
<tr>
<td>Width of pulses</td>
<td>3ns</td>
</tr>
<tr>
<td>Frequency</td>
<td>1-6</td>
</tr>
<tr>
<td>Diameter of spot</td>
<td>1-8mm</td>
</tr>
<tr>
<td>Cooling manner</td>
<td>Closed-off water circulation + air</td>
</tr>
<tr>
<td>Program language</td>
<td>English</td>
</tr>
<tr>
<td>Dimension of machine</td>
<td>45<em>35</em>32cm</td>
</tr>
<tr>
<td>Dimension of package</td>
<td>57<em>48</em>54cm</td>
</tr>
<tr>
<td>N.W.</td>
<td>13.5kg</td>
</tr>
<tr>
<td>G.W.</td>
<td>24kg</td>
</tr>
<tr>
<td>Packing</td>
<td>aluminum alloy case</td>
</tr>
<tr>
<td>Voltage</td>
<td>220V / 110V</td>
</tr>
</tbody>
</table>

If you want to learn more details about the Q-switch ND:YAG lasers, please finish the following Chapters.
Chapter 6 USB Function

Remarks: This laser has a USB port on the back.
What is this USB port for?
1. Customer can change Logo and upgrade the software freely.
2. This laser has two ways to operate the software on screen. The first way is just touch it. The
second way is just to insert a mouse into the USB port and use the mouse to control the software. This is a new design.
Chapter 7 Operation of Laser Instrument

1. Notice
(1) First you should ask the customer if he/her is scar physique, if had changed skin, if he/her is allergic skin, if he/her is shaded eyebrow or removed eyebrow, tattoo by other ways. You should examine that if the treatment area already has scar, and you should tell the sufferer that maybe there is pigmentation some times later after you remove the pigment, and these pigment is caused by sunshine and he/her can get treatment one and a half months later.
(2) The operator should tell the sufferer that may happened situation and treatment principle during the treatment using the 1064nm to treat the black and blue pigment in case the unnecessary bothers. You can shave the eyebrow before removing the eyebrow with machine in order to examine the effect. We advise you that you should treat the big area tattoo and nevus little by little and time by time in case uncomfortable of the sufferer. You can also help the sufferer to build the confidence according to the contrast between before and after the operation.
(3) There maybe the sound of the pigment breaking when you treat the deep tissue of the tattoo because of the strong absorption to laser energy with 1064nm. The tint color of the pigment can comes out the cuticle after absorbing the energy. Some people may have some drops of drain blood because of thin cuticle. In the first time treatment, the color of the tissue may become thin, but later the color may recover about ten minutes later. This kind of effect is normal. The function of digesting and transportation of the macrophage can continue long time, and the color can become thin during this period. We advise you take the second treatment one and a half months later of the first time. The eye is more sensitive, so it tears to influence the effect; generally we take two times to get into the effect.
(4) The hair may exfoliated after operating as you remove black and blue pigment with 1064nm, but the new hair can tend to normal. There may ooze blood and tint edema in the treatment area. It will be normal if there is the feeling of itch and the tissue is a little hard. All these feeling will disappear in two weeks or about a month, and the time is different according to different people.
(5) Hemoglobin of the tissue absorbs certain wavelength of the 532nm when you remove brown, red pigment with 532nm. The surface of the skin irradiated by laser may turn white, so as to making the pigment drops and pigmentation.
(6) The capillary may break and form congestion as absorbing the wavelength of 532nm, if serious can cause scab. But it is well in about 20-60 days according to different people.
(7) The sufferer will be forbidden drawing eyebrow, bathing and touching in the blood oozing area, and avoid shinning in case causing pigmentation. If serious, the sufferer can take some medicine and erytheromycin ointment which external used followed by doctor. You also will not allowed to take pepper food and alcohol.

2. operation skill and technique
(1) demands before operation
Cosmetologist should build file for customer in order to well know about the real disease and choose the needed energy; at the same time the cosmetologist should explain the advantages of laser machine in order to make the customer to relax and cooperate.

Clean the treatment area, disinfect utensil, shave the eyebrow, and wipe affected part with physiological saline. You must pay attention that the affected part must be dry, and the treatment will be affected if there is water in the affected part.

The worker should wear white clothes and relevant wavelength glasses. Keep the operation room clean and illumination is bright enough. You should keep the temperature is between 22 and 28℃, and avoid the laser irradiating non treatment area.

(2) Demands during the operation
A. the needed frequency during the operation

<table>
<thead>
<tr>
<th>Adaptive disease</th>
<th>Best used frequency</th>
<th>Treatment Distance</th>
<th>Energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tattoo removal</td>
<td>3--4Hz</td>
<td>3—5cm</td>
<td>500—600mj</td>
</tr>
<tr>
<td>Eyebrow removal</td>
<td>2--3Hz</td>
<td>1—2cm</td>
<td>400—500mj</td>
</tr>
<tr>
<td>Eye line removal</td>
<td>1--2Hz</td>
<td>1—2cm</td>
<td>400—500mj</td>
</tr>
<tr>
<td>Lip line removal</td>
<td>3--4Hz</td>
<td>2—3cm</td>
<td>400—500mj</td>
</tr>
<tr>
<td>Spots and naevi removal</td>
<td>3--4Hz</td>
<td>3—5cm</td>
<td>600—700mj</td>
</tr>
<tr>
<td>Birthmark removal</td>
<td>3--4Hz</td>
<td>3—5cm</td>
<td>650—800mj</td>
</tr>
</tbody>
</table>

Notice: ① 1064nm gets rid of blue, black and cyanine pigment.
② 532nm gets rid of red, coffee and brown pigment.
③ the light head should form right angle with treatment area in order to reduce the energy losing.

The light spots should fold and translation to a line when you remove eyebrow, eye line and lip line.
You should remove the spot and naevus time by time in the little area. The treatment area should ooze blood when you treat the little area.

B. operating technique introduction for different disease
① tattoo removal
a. removing single blue and black eyebrow:
The operator chooses the needed energy according to the depth of the pigment and move slowly to the skin with light head so as to making the sufferer has a mentality reception process, at the same time the sufferer should close eyes when accepting the treatment. You should settle the light speed to 5Hz; the distance from light head to skin is one or two digit space distance. You may treat from the head or may from the tail of the eyebrow. You can take the second treatment if there is color restoration. The energy can add 20-40 and the light head can drive up 2O–3 digit space distance in order to making the effect becomes well.
b. shaded eyebrow removal (the shaded eyebrow can be removed clearly 2 or 3 times)
You can settle the light speed is 3Hz and the energy can be settled according to the above form.
First you can treat with 1064nm in 2-3 digit space distances, and then you can treat with 532nm in the second time. The brown pigment belongs to mixed pigment, so you should take more than two times, the period is from 45 to 90 days. You can choose different light head according to the left color.
② Eye line removal
The light speed can be settled to 5Hz, and the energy is settled to the lowest point. It is about
2-3 digit space distance from light head to the treatment area, and the light will be seen as reference. The sufferer’s eyes should be protected with thick medical cloth. First you remove the sufferer’s lower eye line, and the sufferer should close his/her eyes, at the same time the eyeball looks up. The operator presses the cloth with index finger, and peels away the lower eyelid with middle finger. The light speed can be settled to 5Hz. When you remove the upper eye line the sufferer should close his/her eyes with eyeball down gaze. The operator presses the cloth with middle finger and pulls the eyelid with index finger. The light speed can be settled to 5Hz.

- Lip line removal
  The light speed can be settled to 5Hz, and the energy can be settled according to the reference form above. The distance from light head to the treatment area is 3-4 digit space. You can remove the black, coffee and deep red with 1064nm for the first time and then use 532nm for the second time. You can use 532nm to remove thin red, red, thin coffee and thin brown. You must pay attention that you accept the second treatment of removing lip line, soak lip and the lip’s tattoo only half one year. The course of treatment is from 45 to 60 days until it is clear.

- Tattoo removal
  The light speed can be settled to 3Hz/5Hz, and you can settle the energy according to the reference form above. The distance between light head to treatment area is 3 or 4 digit space. The effect will be best if there is blood oozing point. The light head of 1064nm gets rid of blue and black pigment while 532nm gets rid of red and coffee pigment. The course of treatment is from 45 to 90 days until it is clear.

- Speckle and naevi removal
  The light speed can be settled to 3Hz/5Hz, and you can settle the energy according to the reference form above. The distance between light head to treatment area is 3 or 4 digit space. The effect will be best if there is blood oozing point. The light head of 532nm gets rid of red pigmentation while 1064nm gets rid of speckle and naevi. The course of treatment is from 15 to 30 days until it is clear.

- Birthmark and nevus of Ota removal
  The light speed can be settled to 3Hz/5Hz, and you can settle the energy according to the reference form above. The distance between light head to treatment area is 3 or 4 digit space. The effect will be best if there is blood oozing point. The light head of 532nm gets rid of red pigmentation while 1064nm gets rid of birthmark. The course of treatment is from 45 to 90 days until it is clear.

The reaction during the operation and recovery after the operation
The pigment of the lesion tissue is broken into gains small enough to be absorbed and digested by macrophage. Part of the particles which in the superficial is discharged from the body and the other part which in deep tissue is regularly permutated in superficial, so the tattoo can return in short time. It will be normal if part of the skin becomes red swelling, blister and even blood oozing because the black pigment absorbs the energy strongly when you treat the deep tattoo. The degree is different according to different people, and you can feel a little itch and hard of the tissue. Generally speaking, the uncomfortable will disappear in 3-7 days, but it may take 1-3 months for some special constitution.

You will not be allowed to draw eyebrow, take shower and get sunshine after getting treatment. You also should change the bad dietary habit followed the doctor. You can’t take alcohol in 3-7 days. We suggest that you should take antibiotic if blood too more and serious swelling after treatment. You can daub erythromycin ointment to help to heal in the recovery period.
the determinants for which pigment is different to dispel

- The quality of the texture of the pigment, the pigment divided into plants pigment, mixture pigment, and chemical pigment. The plants pigment is dispelled easiest while the chemical pigment is most difficult to dispel. Generally, there are iron and lead in the mixture and chemical pigment, so it is different to remove.
- The depth of the pigment. Generally speaking, the deeper of the pigment, the more difficult to remove. And it also takes many times to dispel. It will easy to dispel if the depth of the pigment is thin. The effects will not well if the pigment is chemical even the depth of the pigment is thin.
- The different physique of people. The factors include age, skin, and body immunity and so on.

3. The knowledge collection of eye brow removal

1. The differences between the first and the second eye brow removal:
   You should use the energy which near the focus energy. It is farther than the first time and the energy is bigger than the first time.

2. The reason that the coffee turns to blue and black:
   It is normal reaction if the coffee turns to blue and black because the coffee is a mixture pigment which includes iron, lead ion, iron ion. And all these ion can produces pigmentation, so we advice you remove the pigment with 1064nm for the first time and then use 532nm. You can examine the effect half one month later. You can use 1064nm to remove if the color turns to blue, and use 532nm if it turns to red.

3. Why does some red eyebrow have no reaction after removing?
   The pigment does not belong to plant pigment but the chemical pigment, and the iron ion has reached in to derma, so it is difficult to remove. You should use the focus energy of 1064nm to break up the pigment until it appears the oozing blood, and then you remove it with 532nm.

4. How to remove the speckle of the face?
   There are good effects on removing drought spot and butterfly speckle which caused by climate. The deep and hereditary speckles are difficult to remove while shallow and formed by acquired factors. You can use the focus energy to remove the senile plaque until it appears oozing blood. There are three treatment courses with 45 days as a interval period.

5. The treatment ways to remove naevi.
   Using the focus energy to remove the naevi until it appears oozing blood.

6. Can the scar constitution be removed?
   A few people can be removed but the effect is not well. You should not use the focus energy, but to use the big facula and little energy.

7. Can the pregnant woman be removed the eyebrow?
   It is not allowed to accept the eyebrow removal.

8. How to remove the red blood streak and what degree will be ok?
   We don’t suggest that you remove the red blood streak, because the 532nm can absorb the hemoglobin in the blood. It can form the purpura to cause the operation fail.
Instrument

1. Ordinary maintenance of the machine
   (1) Clean the output lens: You should clean the lens regularly after using some times. The spatter matters of the pigment which splash into the lens in the treatment period may influence the light energy and make the laser become hot. You can loosen off the lens with screwdriver and clean the lens with anhydrous alcohol through lens paper and cotton swab. You must keep the gleaming convex surface towards to the inside. Otherwise, it can break if the direction is wrong.
   (2) It needs to change in to the pure water after some times. You can immit the same capability water after you take out the 2/3 of the water. After immiting, you should examine the water level until the water flow unblocked. You can press the preheating key after the water flows 5 minutes.
   (3) The cooling water must be distilled water or pure water, and we advice you use preparation distilled water or pure water which is saled in the market. Mineral water and tap water will not be allowed to use in case the impurity influence the normal work.
   (4) You will be not allowed to take down the machine secretly.

2. The guide for examining the malfunction
   (1) The whole machine can not open
      ① If the power supply has electricity and if the attaching plug is ok.
      ② If the red switch is on the open position, you should turn the hurry-up switch right and the switch is lifted.
      ③ To examine the fuse, and you must change it if the fuse is burnt down.
   (2) The water is not flow as you open the machine
      ① Malfunction phenomena: The water is not flow or it doesn’t flow smooth. In order to make the machine safe, we adopt the close transportation way and reserve 1/5 volume of the water. Using the imperforation water tank in case leak water in the transportation, and at the same time the indication light is on but the purple X-light is not on when you press the preheating key.
      ② The correct processing methods: Loosen off the imperforation water cap and add the water until to the standard the water level and then change into the perforation water cap if the lever is too low. Restart the machine and press the preheating key. The key’s adsorption is ok if you hear the sound”pa”and the water flows normal and the machine is going to the state of “stand up”.
      ③ There is no laser output when you kick the pedal.
      ① To examine if the machine goes into the prepare state.
      ② To examine if the pedal is normal and it will be ok if it is damaged.
      ③ To examine if the working key is pressed.
      ④ To examine if low energy is output. You can improve the energy through adjust the energy key.
      ⑤ The energy becomes weak or there is no light comes out.
      ① The machine can not work as normal if the voltage is too low.
      ② The lens is dirty. You should clean the lens according to the right operation.
      ③ The X-light is burnt down; you should change the laser gun.
      ④ You must stop working and use the machine in 30 minutes if the apparatus.
Loosen off the light head and examine if the former lens is damaged.
To examine the handle and the light head carefully if these parts is leak water. You must change them if there is leak phenomenon.
You may get an electric shock when you touch the machine.
Because the weather is dry and we advice you wear as less chemical fiber clothes as possible.
You should use the three grounding plugs and the electrical outlet must have grounding line.
the voltage is unstable, you should collocate a voltage stabilizer
(6) the machine leaks water
① Manipulation handle leaks water.
② Water leak because of the strong shake in the transportation.
③ The water tank and the water pump leak water.
Please send the equipment to the company at once or counterclaim from the freight company according to the above situation.
(7) There is noise in the operating process when you press the preheating key.
① If you don’t use the instrument for a long time, the instrument will simmer slowly. Please repeat the boot.
② Please raise the temperature appropriately if indoor temperature is too low. You can install the air condition.
③ If the lines of the instrument lights appear to be imaginary or stopped, please check the lines immediately.
④ Please keep indoor dry if indoor humidity is too high.
⑤ If the xenon is burnt out, please replace the xenon lamps.
(8) Energy will be weaken in the use of instrument
① If there is impurities adhered to the treatment head lens, it will lead to block the light. At the moment, please check the lens. If there is pigmentation, please use ethanol to wash it.
② If the humidity of the operation handle is hot, please let the instrument rest for 30 minutes or replace the cooling water.
③ Check the lens. If it is smashed, please contact with the manufacturers immediately.

Chapter 9 The Reference of Laser (Eyebrow) Beauty

1. The knowledge of laser beauty
(1) What is laser eyebrow?
Laser can produce high-energy and gather accurate single color light. It has a (strong) penetration and target. It will produce high-calorie at the local area while working at human disease tissue but it doesn’t damage the surrounding normal tissue. Laser eyebrow uses the laser light “selective absorption of light” principle. That is to say, the laser fires the high-energy instantly and penetrates the dermis layer of skin pigment effectively finally reaches the mission. It is absorbed by the corresponding pigment mission. After heated the pigment mission expands immediately,
chips into the small particles which can be swallowed up by the macrophages. After digested by macrophages, it will be released. The pigment will get light and finally disappear. The transmitted disease of the pigment in the face will be completely dispelled. The laser beauty is safe and reliable it doesn’t have pain, it is welcomed to all the people.

What is the advantages of laser eyebrow?

Apart from the mistaken eyebrow and eye line, Compared to the tradition surgery such as dispelling、frozen、electrocute、chemical(medicine)+dispelling，laser eyebrow has following advantages:

A: Less bleeding, the laser beam is very thin and easy to do only exposure lesions. It doesn’t hurt or injure the surrounding systems: at the same time laser has the effect of “hot welding” to the vessel. It can close the vessel. Therefore it will bleed less or even don’t bleed.

B: It has less pain. On the one hand because of the thermal coagulation, the nerve ending is damaged and loss the feeling of pain. On the other hand the operation of the surrounding normal tissue is less or even lack, at the same time it adopts a sub-sub-point rapid treatment. Therefore, patients feel less pain. This treatment doesn’t need anaesthesia. Some of them even only need the application to the skin surface.

C: The quality of surgery is high. Because the surgery doesn’t need blood, the vision is clear, it is easy to decide to stay or not. Of course it also needs the quality assurance and responsibility of the operator.

D: The time of surgery is short. The energy of laser is big and centralized. Completing the point of the treatment only needs a few nanoseconds and a few milliseconds.

E: less scar: As following the advanced “the principle of selective absorption” to finish laser beauty, it won’t cause normal tissue irreversible damaged, so there is no scar.

F: Fewer recrudescence: as the laser treatment to the lesions is complete, the injury to the surrounding normal tissue is minor. Therefore, the rate of the recrudescence is much smaller than traditional therapy.

How to master the dose of laser treatment?

In the early stage of the use of laser treatment, you can consider the experience of others. The parameters of the treatment of a certain disease are: laser energy Q, pulse frequency Y and spot size D(direct) . The first two can be gained directly through the machines and the select button. The spot size can be achieved by adjusting skinheads and the treatment of parts of the pitch.

\[
\text{Energy density} = \frac{\text{laser energy}}{\pi \times D} \quad \text{namely: } \ E = \frac{Q}{0.787 \times D}
\]

A: In the actual operation, the dose also needs following points to notice:

The skin color, thickness, rough conditions vary from person to person and due to different sites. Therefore, the dose is different. When you operate the instrument, the dose should be gradually debugging from small to large. You can find a suitable parameter this moment. For instance, first use some spot to experiment, the spot become smaller gradually (that is closing to the scheduling and to lift the treatment head gradually, finally to find the focus position), at the moment energy density (flow) changes from small to large.

B: Please pay more attention to the changes of the skin color in normal part. While treating the vascular disease, the epidermis is normal. Pathologic lesions exist in leather or deeper, at the moment laser radiate to the affected area until the appearance of bleeding. If it doesn’t dispel completely, Please get further consultation with a doctor. If we continue to irradiate, the color of
face will get dark because of heavy dose and it will appear blister and scab. This will cause light and heat damage, we should avoid it.

C. Weather it is skin pigment or vascular skin diseases, we change the dose according to the color depth. If the color of the same lesion changes from deep to shallow gradient, the damage should begin at the dark in light spot. While moving to the light-colored, we should raise skinhead position. It will make the spot get larger, the flow get smaller. (Notice: because of the increase of focus the color will get light, it is an additional matter.)

D. If lesions is larger and location is deep, at the same time the treatment is too deep and width, it will lead to local edema, blisters, exudates. Suffer will feel ache and get fever. Therefore, we should do more times of treatment. The treatment should be layered, slicing.

E. Notice this point in all the laser treatment: the light beams should be vertical all the time. All the treatment doses are the parameters referring to the vertical laser beam. If it deviated from the vertical position, the laser flow will be reduced and the laser energy can not be completely utilized.

2. Attention of application of 1064 nm and 532 nm Q-switched laser to get rid of pigment

(1). According to the principle of laser selective absorption, 1064 nm wavelength is used for getting rid of blue, black, cyan pigmentation, 532 nm wavelength is fixed for removing red, coffee, brown treatment. Therefore, while dispelling the pigmentation in the surgery, we select the skinhead in the treatment of wavelength based on the examples.

(2). 1064 nm skinhead is usually used for debugging apparatus coincided with the energy. The dazzling green light given off by 532 nm can absorb the human’s hemoglobin, which will cause the “purpura” phenomenon in the subcutaneous tissue. Therefore, it is only used for treatment of the fixed-base (such as red).

(3). No matter what conditions it is, please keep the use of laser is safe. Make sure that laser wavelength of 1064 nm and 532 nm don’t directly rip into eyes, or it will bring about irreparable damage.

(4). In order to avoid the remain of the pigment in laser treatment, when we treat the mixed and fixed pigment (such as coffee, brown), we should choose 1064 nm wavelength first. Meanwhile, based on the case we choose 532 nm to treat, such as we use 532 nm to get rid of red pigment directly.

(5). We use 532 nm wavelength to get rid of eye line. The operator is supposed to operate according to the training in the company strictly. The operator should protect the patient’s eyeball strictly and effectively, otherwise, the treatment if forbidden (the injury to the eyeball is not reversible).

(6). The side-effects that comes from using 532 nm wavelength to dispel brown-red are: skin surface getting white after vaporization, epidermal necrosis, a certain loss of pigment or pigmentation. Comparing to 1064 nm wavelength, the red swelling phenomenon is serious. There is purpura in the subcutaneous. After the operation we can take antibiotics drugs to alleviate discomfort, after 72 hours of care we can use the repair liquid for nursing. Due to personal system difference the restoration period is about more than 60 days or six months time.

(7). For several times of eyebrow the dispelling interval is no less than 60 days. The best time for the next treatment is 100 days after the last treatment. It is forbidden to treat again within 20 days after the last treatment. If there is violation operation, it will bring about the malignant consequence of tissue hyperplasia.

(8). If the operation needs oozing of blood in the treated areas, we should pay attention to avoid to touch the affected area, collision of water, solar sunscreen apart from the infection. Please notice
self-conditioning and eating habits. Avoid having spicy foods. Don’t drink if the color is deep.

3. **Eyebrow notes (sample)**

(1) Our hospital use multi-function laser of Radium beauty instrument for the treatment of eyebrow, eye line, tattoo. It is a high-tech and intelligent precision instrument that doesn’t injure the skin, hair follicle and completely eliminates the pigment. It eliminates all the methods of washing eyebrow, such as using drug, biological methods, magnetization methods, freezing process (all of these methods have some injury to the skin and hair follicle and they can’t completely clear the pigment). The use of eyebrow-washing is one of the biggest dedications to beauty and the fruits of the latest technology. At the same time it is the gospel of lady.

(2) Many similar treatment instruments take three to four times. The introduction of the instrument in our hospital uses import core. After the continuous efforts and study, we can make sure that the cure rate of washing eyebrow reaches about 85 percent. Some people even feel better. As the precision instrument is more expensive, in order to make all the customer convenient, in the apparatus of the warranty period, we use the outstanding price at present. If you use this instrument to wash eyebrow, you should pay. The second charge for the second according to the effect of the last treatment.

(3) After the treatment of laser beauty instrument for washing eyebrow, eye line, tattoo, most of the people will have localized edema on the site of the radiation energy. Some people will have the phenomenon of blister redness. All of these belong to the scope of normal reaction. The general time for local edema is three days. If it is serious, it will disappear in seven to ten days. According to the situation, customers can use topical antiphlogistic ointment or restoration liquid after forty eight hours of operation to make the epidermal tissue healing. Blisters or redness usually lasts one to two months (some people needs three to four months), then it can recover completely. After washing eyebrow, most of eyebrow will swap one time, it will grow in one to two months. Some older person (30 years and above) need about three months to recover. Some individual need a longer period of treatment. The operation should accord with our advices. In the treatment, if you disobey the doctor’s order, you take full responsibility. All the people who accept the apparatus of treatment should comply with the above provisions and sign on eyebrow notes.

4. **I would like to read carefully and approbate the above provisions. I am willing to comply with this agreement.**

Signature of self:
Signature of doctor:

Date:

The dossier of sufferer (sample)

<table>
<thead>
<tr>
<th>Name:</th>
<th>Sex:</th>
<th>Age:</th>
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<tbody>
<tr>
<td>Operation Date:</td>
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</tr>
<tr>
<td>Home address:</td>
<td></td>
<td>health status:</td>
</tr>
<tr>
<td>Contact phone:</td>
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<tr>
<td>Photos before the operation and symptom note:</td>
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</tbody>
</table>
Photos after the operation and effect note:

Beautician:                                contact phone:

After the operation, it is forbidden to paint, wash and exposure eyebrow on the bleeding. Please obey doctors’ advice and combine with diet conditioning. You can’t drink in three to seven days. If there is the case of more bleeding, serious swelling to the sensitive customer, we advice you take antibiotics drugs (Acetylsirimycin). In recovery period (after 72 hours), we use erythromycin ointment to heal the affected area, we can also wipe restoration liquid to repair.